MALARIA TREATMENT POLICY: TECHNICAL SUPPORT NEEDS ASSESSMENT

Malaria Action Coalition (MAC) Burundi Mission Report

Akpaka Kalu	World Health Organization/Regional Office for Africa
Monica Olewe	World Health Organization/Intercountry Programme
Willy Kabuya	Management Sciences for Health/ Rational Pharmaceutical Management Plus Program

March 17–25, 2005

This report was made possible in part through the support provided by the U.S. Agency for International Development, under the terms of cooperative agreement number HRN-A-00-00-00016-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the U.S. Agency for International Development.

Suggested Citation

Kalu, A., M. Olewe, and W. Kabuya. 2005. *Malaria Treatment Policy: Techical Support Needs Assessment—Malaria Action Coalition (MAC) Burundi Mission Report.* Published in collaboration with the World Health Organization. Arlington, VA: Rational Pharmaceutical Management Plus Program.

CONTENTS

ACRONYMS

ACT	artemisinin-based combination therapy
ALUMA	Action de Lutte contre la Malaria
ART-AQ	artesunate-amodiaquine
BCC	behavior change communication
CAMEBU	Centrale d'Achat de Médicaments Essentiels, de Dispositifs Médicaux, de Produits et Matériels de Laboratoire du Burundi
DGSP	Directeur Générale de la Santé Publique
DPML	Direction Nationale de la Pharmacie, Médicaments et Laboratoires
ECHO	European Community Humanitarian Organization
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
HMIS	health management information system
IEC	information, education, and communication
IPT	intermittent preventive treatment
ITN	insecticide-treated nets
LMTC	Lutte contre les Maladies Transmissibles et Carentielles
MAC	Malaria Action Coalition
MOH	Ministry of Health
MSF	Medécins Sans Frontières
NMCP	National Malaria Control Program
NGO	nongovernmental organization
OFDA	Office of U.S. Foreign Disaster Assistance
OR	operations research
RBM	Roll Back Malaria
RDT	rapid diagnostic test
REDSO	Regional Economic and Development Services Office
SIPHAR	Société Industrielle Pharmaceutique
SP	sulfadoxine-pyrimethamine
STGs	Standard Treatment Guidelines
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
USD	U.S. dollar
WHO	World Health Organization

INTRODUCTION

African countries are undergoing a period of dramatic change in their national malaria treatment policies as more of these countries adopt artemisinin-based combination therapy (ACT). Successful implementation of the new ACT policies presents many challenges, and most countries will require technical assistance from a variety of sources, both internal and external. The Malaria Action Coalition (MAC) partnership brings together three partners that have considerable expertise in many of the areas related to ACT implementation, which complements expertise brought by other Roll Back Malaria (RBM) partners. The U.S. Agency for International Development (USAID) has made a commitment to the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) to provide technical assistance through the MAC. This mission was therefore designed to assess the progress of Burundi toward implementing a new ACT policy and to determine what, if any, additional technical support it may need to successfully complete the implementation. It is expected that the successful implementation of the ACT policy will contribute to the attainment of the RBM goals for the prevention, treatment, and control of malaria in sub-Saharan Africa through coordinated technical support.

Mission Objectives

The objectives of the mission were to work with Burundi's RBM partnership to—

1. Define the technical support requirements for need-based malaria treatment policy implementation over the next 36 months

2. Develop priority lists of technical support requirements that the MAC and other RBM partners could provide within the next 12–18 months

3. Develop a MAC operational plan (activities, timeline, budget, and responsible MAC partner) for providing technical support in the next 12–18 months

4. Develop a medium-term (three-year) need-based plan (activities, timeline, and budget) for technical support for resource mobilization

5. Identify available in-country expertise that could potentially be used to provide technical support to Burundi's National Malaria Control Program (NMCP)

Mission Expected Outcomes

The expected results of the mission were the following—

1. Medium-term (three-year) need-based technical support requirements of Burundi for the implementation of the ACT policy

2. Priority lists (derived from the medium-term plan) of technical support requirements that the MAC and other partners will need to support over the next 12–18 months if ACT implementation is to proceed in a timely manner

3. MAC operational plan (activities, timeline, budget, and responsible MAC partner), based on priorities defined in the priority lists, for providing technical support to Burundi in the next 12–18 months

4. Medium-term (three-year) need-based plan (activities, timeline, and budget)—based on requirements defined in the medium-term plan for implementation of the ACT policy—for technical support to Burundi that will be used for resource mobilization by USAID

5. List of in-country experts who could be used as consultants by partners

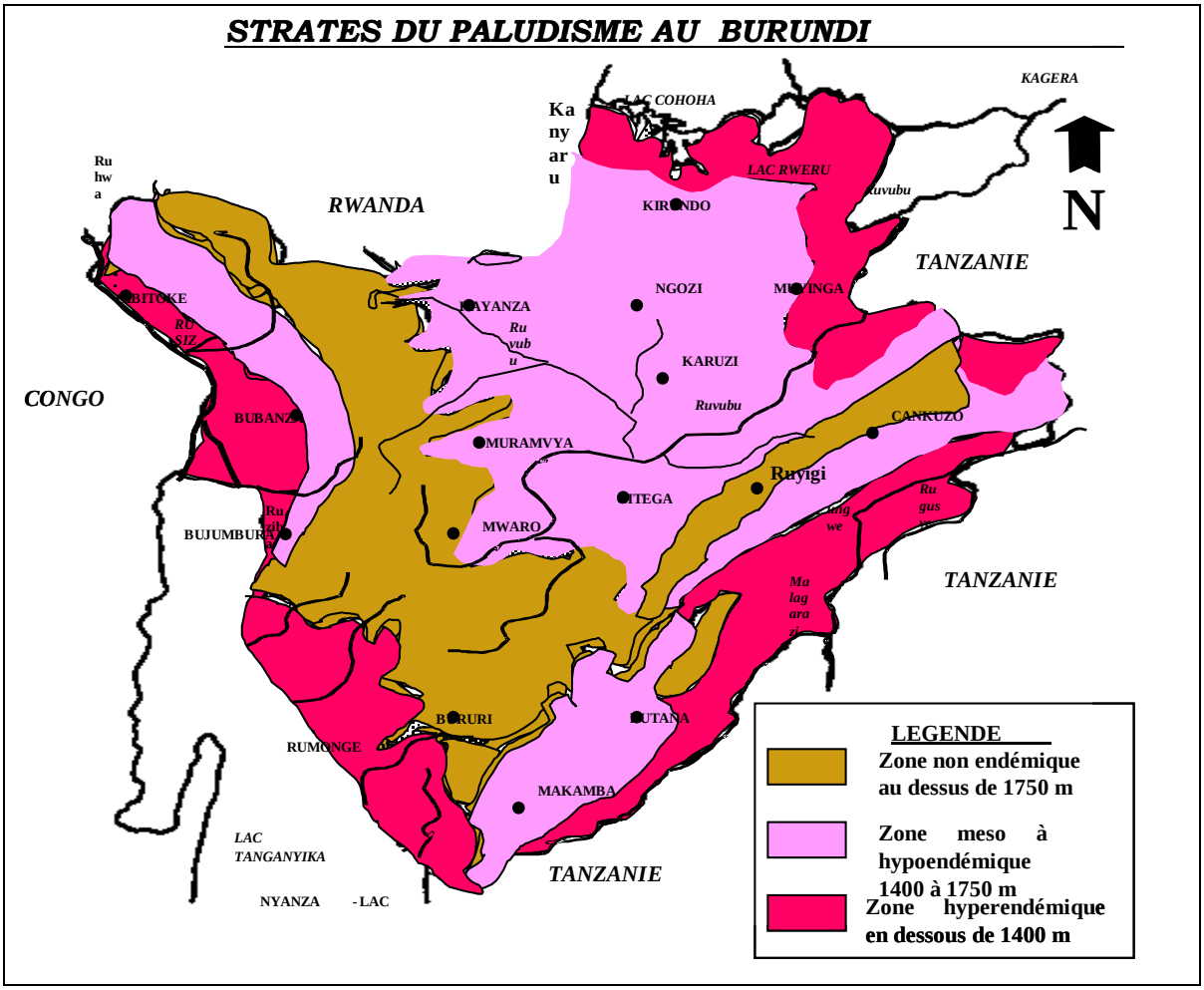
Annex 1 summarizes the technical assistance needs identified by the team in collaboration with in-country stakeholders and partners, as well as prioritization of these technical support needs. The mission itinerary is attached in Annex 2, and Annex 3 contains a list of people consulted during the visit.

Epidemiology of Malaria in Burundi

Burundi is one of the countries that is most advanced in terms of the implementation of an ACT policy and was one of the countries selected for the initial MAC team visits. Malaria is the primary cause of morbidity and mortality in Burundi, accounting for 53.8 percent of morbidity and 47.2 percent of mortality in 2001. The parasites responsible for causing malaria in this country are *P. falciparum*, accounting for 90 percent of malaria morbidity; *P. malariae,* 8 percent; and *P. ovale,* 2 percent. Malaria transmission in the country is both endemic and epidemic (Figure 1). Eight of the 17 provinces, representing 56 percent of the population, are prone to malaria epidemics. Twenty-three percent of the population lives in malaria hyperendemic areas.

The main objective of the 2003–2007 Burundi national malaria strategic plan is to reduce morbidity and mortality due to malaria. By 2007, the specific objectives are to reduce by 30 percent the 2002 mortality due to malaria, reduce by 40 percent hospital admissions due to malaria, and reduce by 30 percent the morbidity due to malaria.[1]

[1] Strategic plan for malaria in Burundi, 2003 to 2007 (December 2002 version).



Source: NMCP Burundi epidemiological service

Figure 1. Malaria Transmission Zones in Burundi

Organization and Funding of Health Services

Burundi has three levels of political administration—national, provincial, and commune—and the public health service is structured according to this political administrative structure (Figure 2). At the provincial level, the public heath service is divided into sectors (zones), with each sector chief responsible for 10 to 20 health facilities. In most provinces, the health sector chiefs are housed at the provincial health office and are therefore part of the provincial level of the public health service structure. It is the responsibility of the provincial health officer to coordinate all health interventions in the province and ensure that the protocols are followed by all health facilities. The health service at the commune level is the health center. Each commune has one to three health centers.

The NMCP is a unit of the Malaria, Nutrition & Schistosomiasis division of the Ministry of Health (MOH) (Figure 3). This relatively low level within the MOH compares unfavorably with that of other diseases with less impact on morbidity and mortality, such as HIV/AIDS and onchocerciasis, which have their own divisions. The unit has 20 headquarters-based staff members. The NMCP works with all relevant departments of the MOH, including the Department of Reproductive Health, Department of Health Services, and Department of Emergencies and Catastrophes, in the planning and implementation of malaria prevention and

control programs. There is, however, no defined mechanism for regular coordination within the MOH. The NMCP provides direct technical and financial support to all the provincial bureaus of health for planning and implementation of malaria prevention and control programs. The provincial health offices are also involved in the annual planning and review meeting of the NMCP.

The two sources of funding to government at all levels are government budgets and donations. Government budgets are centrally managed, and annual allocations are made to the various ministries and parastatals for distribution to each sector. The European Union is funding a pilot health cost-recovery scheme in five provinces to enable the health centers to recover some of the costs of providing health services.

Donations can be requested from and given directly to any of the health sector levels. Donations to the central government are allocated depending on where there is greatest need. For a donor to invest in a particular province, the donor has to enter into a contract with the national government. The government will then introduce the donor to the Ministry of Foreign Affairs, where the authorization paper will be given. On arrival at the province, the donor will also be required to sign a protocol with the province.

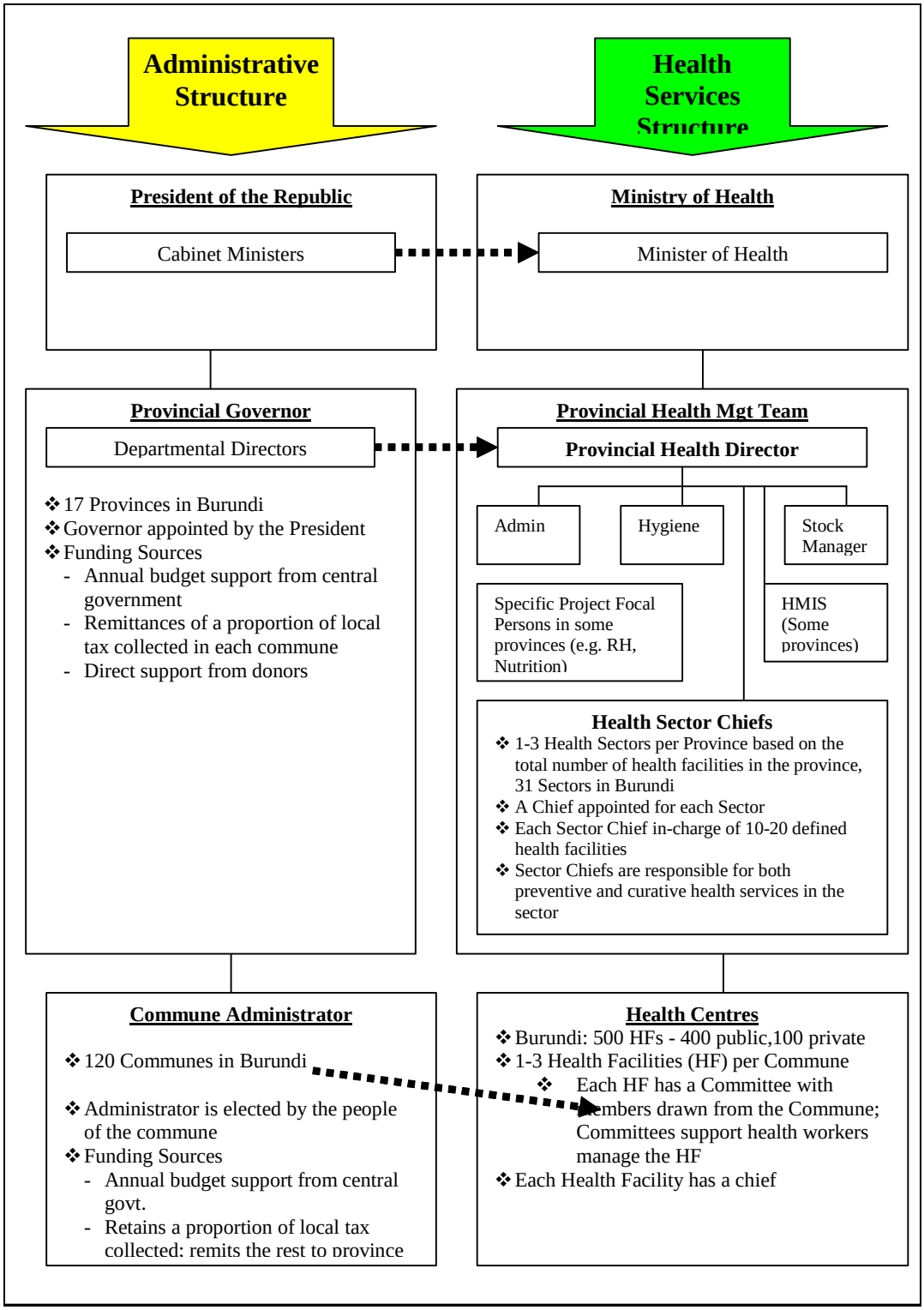


Figure 2. Relationship between the National Administrative Structure and the Public Health Service Structure

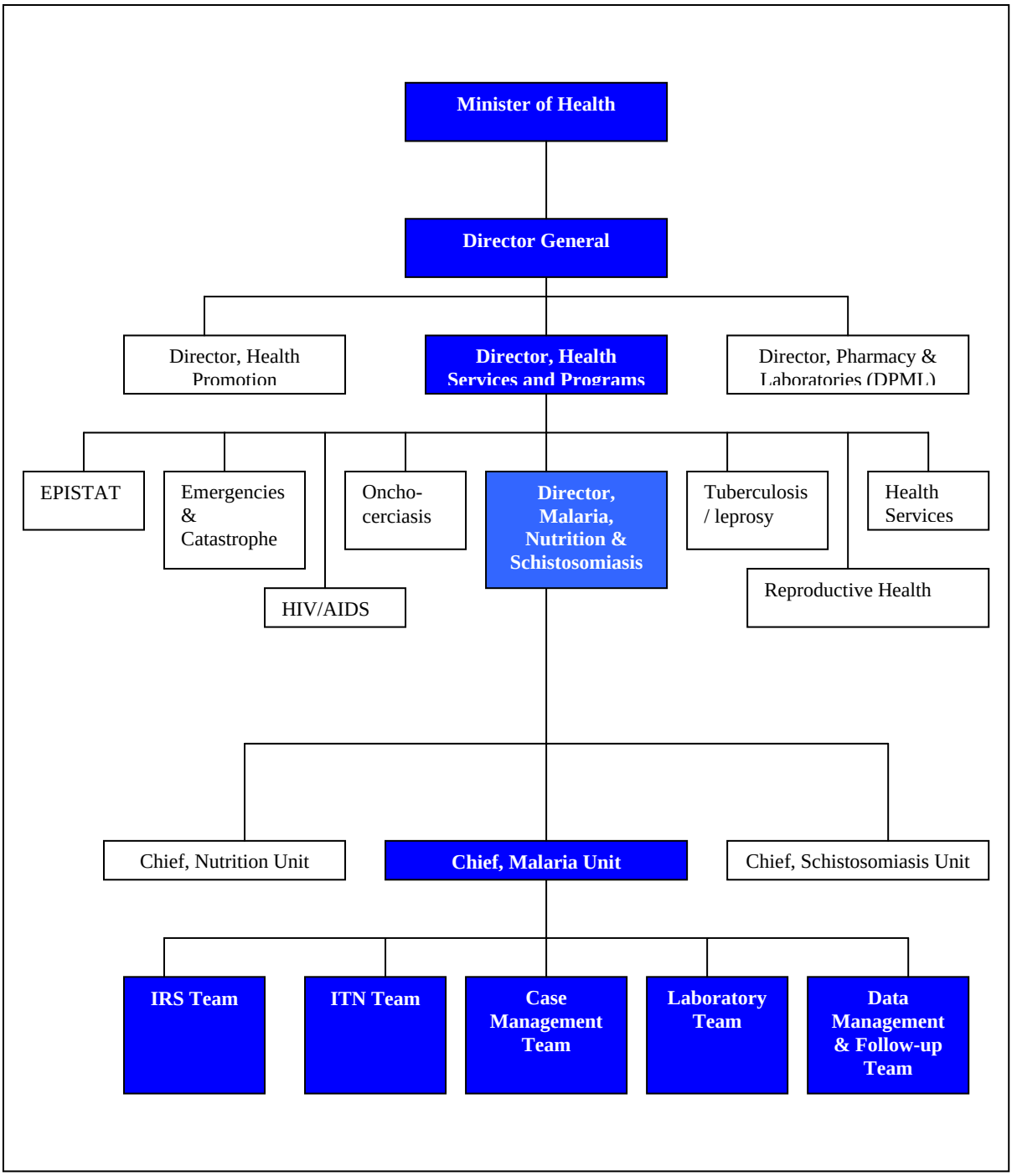


Figure 3. Malaria Control in the Hierarchy of the Ministry of Health in Burundi

RESULTS

Planning and Coordination

Although the artesunate-amodiaquine (ART-AQ) combination therapy has been utilized in Burundi since the 2000–2001 malaria epidemic, the national malaria control policy was not changed until November 10, 2003, when the artesunate-amodiaquine combination was adopted as the first-line treatment for uncomplicated malaria. For pregnant women, ART-AQ is to be used only in the second and third trimesters for uncomplicated malaria. Pregnant women with uncomplicated malaria in the first trimester are to be treated with quinine. As a result of the high level of resistance to sulfadoxine-pyrimethamine (SP), Burundi does not recommend the use of an intermittent preventive treatment (IPT) with SP strategy to prevent malaria during pregnancy.

Following a consensus meeting held in November 2002 to plan the rollout of the new treatment policy, no specific implementation plan was developed. The treatment policy change and the planning for the implementation of the new ACT policy were done in consultation with other RBM partners. The partners involved include the European Community Humanitarian Organization (ECHO), Belgian Cooperation, the World Bank, and USAID's Office of U.S. Foreign Disaster Assistance (OFDA). A technical committee for drug policy change was set up by the NMCP and included members of these organizations. This technical committee was disbanded after the new drug policy was adopted, and a drug policy implementation committee was set up. The drug policy implementation committee was responsible for developing the plans for the initial implementation of the policy and for overseeing its rollout. It did this through four task forces responsible for planning; information, education, and communication (IEC); administration; and management. This committee continued to work until December 2004, when it too was dissolved. Nongovernmental organizations (NGOs) such as ALUMA (Action de Lutte contre la Malaria) are also involved in the implementation of the ACT policy. The activities of all NGOs are coordinated through the Directeur Générale de la Santé Publique (DGSP).

Nationwide deployment of ACT started on November 10, 2003, with the medicines distributed to all health centers and some hospitals. (Not all the hospitals received ART-AQ as most of them are referral facilities that would not be likely to see cases of uncomplicated malaria.)

Capacity Building

Although the mission team did not organize a formal meeting with local technical experts in-country, by the end of the visit, team members had identified two individuals who could serve in this capacity. The two individuals were identified through the course of the mission team's meetings with in-country partners and stakeholders, and the team discussed with them the possibility of serving as local technical consultants. The team planned to follow up with these individuals after the trip ended to confirm their interest and availability to serve in this capacity.

Financing and Resource Mobilization

The process for the purchase of pharmaceutical products in Burundi requires an annual vote by the MOH, through the Direction Nationale de la Pharmacie, Médicaments et Laboratoires (DPML), for the products for each province. The allocations for each province are based on the number of health centers and on the morbidity data and pattern of diseases for that province. For 2005, the following allocations were made for the entire country: 600,000 U.S. dollars (USD) allocated for the purchase of essential medicines, USD 60,000 for the purchase of medical instruments, and USD 13,000 for the purchase of laboratory supplies. The DPML must approve each province's request for pharmaceuticals before the request is forwarded to the central medical store (Centrale d'Achat de Médicaments Essentiels, de Dispositifs Médicaux, de Produits et Matériels de Laboratoire du Burundi [CAMEBU]). CAMEBU requires full payment for all the products it supplies, so this process ensures that sufficient funds are available for each province on the DPML's balance sheet before the province tries to purchase the product.

Given the limited budget available for procurement of pharmaceuticals, the Government of Burundi was initially reluctant to adopt the ACT policy because of the high cost of the medicines required. The commitment of multilateral and bilateral development partners—including the United Nations Children's Fund (UNICEF), ECHO, USAID/OFDA, USAID/Regional Economic and Development Services Office (REDSO) for East and Southern Africa, USAID/Washington, Médecins Sans Frontières (MSF), and Belgian Cooperation—to financially support the introduction of the ACT policy was instrumental in the adoption of the policy. The condition of this support was that the government ensure that the at-risk population has both physical and economic access to the medicines. As a result, the government decided to provide the medicines at very low cost to all (100.00 Burundi francs [USD 0.10] for children under five years and 200.00 Burundi francs [USD 0.20] for adults).

The health facilities are required sell the treatment doses at these highly subsidized rates. Given that the government policy is one of cost recovery at the health facility level to support the provision of services at these facilities, such low rates were a disincentive for the use of ART-AQ at the health center level, as it did not provide sufficient income to meet their needs. This led to a situation in which some health centers disregarded the new protocol. A health facility assessment carried out in Burundi by the World Health Organization (WHO) in February 2005 found that there was no recorded shortage of ART-AQ at the national level but that 60 percent of the health facilities had stock-outs during the first year of implementation of the ACT policy. The assessment also found that 20 percent of malaria cases were treated with quinine during this period. The study concluded that even though the ART-AQ combination was available nationally, providers at these health centers were using quinine as the first-line treatment because the sale of quinine provided more income to the facility.

The long-term viability of the implementation program depended on the success of the GFATM grant applications. For malaria prevention and control, a total of USD 17.76 million was awarded to Burundi by GFATM during Round 2 of the grant awards. The GFATM Round 2 grant covered the period January 2003 to December 2005. The procurement of ART-AQ and quinine were contained in the proposal, with USD 2.20 million allocated for ART-AQ and USD 2.26 million for quinine. During the December 2004 GFATM review, it was found that Burundi had sufficient stocks of quinine to meet its current needs, and

GFATM recommended that the funds originally allocated for quinine be redistributed. These funds have been reallocated as follows: USD 455,000 for procurement of 350 microscopes, USD 100,000 for use in efficacy monitoring, and USD 1,700,441 for procurement of insecticide-treated nets (ITNs). The GFATM allocation for ART-AQ will provide sufficient funds to procure ART-AQ to meet the estimated needs for the 18-month period covering January 2005 to June 2006.

Long-term financial support for the implementation of the ACT policy remains a concern for Burundi. The country has decided to submit a proposal for the GFATM Round 5 grant that is expected this year. In addition to the procurement of the medicines, additional components to be included in the grant proposal are—

- Strengthening pharmaceutical management systems
- Program management training
- Capacity strengthening for health communication
- Communication on the new treatment policy
- Procurement of microscopes and training of microscopists
- Strengthening the health management information system (HMIS)
- Strengthening the Integrated Disease Surveillance and Response strategy

Essential Medicines List and Standard Treatment Guidelines

The Essential Medicines List was revised in May 2004 to include ART-AQ even though the combination had been in use in the public health system before then. The Standard Treatment Guidelines (STGs) have not yet been revised to include the ACT policy. The LMTC (Lutte contre les Maladies Transmissibles et Carentielles) is awaiting the generic STGs, which are under development in Geneva, to guide the revision of national STGs. The health workers' training modules were revised, and 75 health workers in each province were trained when the ACT implementation began. The NMCP has continued training other health workers.

Treatment relies on accurate clinical diagnosis of malaria, but accurate diagnosis of malaria remains a challenge. There are few microscopes in the rural health facilities, and the health facilities that have microscopes lack the manpower or the skills to use them. The government has been training a cadre of microscopists to use the microscopes in some facilities, both at the hospital and health center levels. An order of 350 more microscopes has been placed using GFATM grant funds. Additionally, MSF is piloting the use of rapid diagnostic tests (RDTs) in several provinces that it supports. The government has also procured some RDTs worth USD 150,493, although these have not been received and the country is currently without any RDTs.

Behavior Change Communication

The Department of Information, Education, and Communication is part of the MOH. It has a staffing capacity of 20 technical staff. It is capable of developing TV sports clips and shows for production by the national TV station. It also develops radio talks in the local language to be aired on the various radio stations. Burundi has more than 10 radio stations, including 2 national stations (one of the national stations broadcasts in Kirundi and the other broadcasts in French, English, and Kiswahili). Two health programs are aired on the radio, with

messages on malaria aired on weekly basis. Currently, the department is developing messages for Africa Malaria Day.

At the initial stages of the new treatment policy implementation, political will and support was sought. Communication packages for health workers were developed with the assistance of WHO and UNICEF. The local administrators were trained and provided with IEC materials for use in communicating and educating the communities on the change in policy. Demonstration sessions of the new treatment and how to use it were conducted. The IEC Department designed and produced envelopes for the dispensing of the medicines; dosages and instructions on how to administer the medicines were inscribed on the envelopes. Dissemination of health messages was augmented by community health committees during the launch of new policy, but the intensity has since diminished. In the facilities visited at the time of the mission, no IEC materials on the new treatment policy were available. In some health facilities, the previous treatment flowcharts are still displayed.

Pharmaceutical Management

Pharmaceutical Regulation and Control

The DPML is part of the MOH and is the government regulatory authority for all pharmaceuticals. The department is responsible for registering all pharmaceuticals to be used in the country. The normal registration process requires that the pharmaceutical company submit a sample of the product to be registered to the DPML, where it is tested to ensure it meets the efficacy, quality, and stability standards set by the department. The registration of ART-AQ did not follow the normal registration process. Because it was introduced for use during the 2000–2001 malaria epidemics, which were considered a national emergency, the registration requirements were waived and the medicines imported and used. ART-AQ was registered for use in the public sector in May 2004.

Procurement

Pharmaceutical procurement and distribution is the responsibility of CAMEBU. CAMEBU was set up in 2000 by a national decree and began operation as a parastatal organization at the beginning of January 2001. CAMEBU has its own board that reports to the Minister of Health but is independent in its operations from the normal government operations. CAMEBU has two directorates: finance/administration and technical operations. The mandate of CAMEBU is to import and distribute medicines nationwide and to ensure quality control. CAMEBU procures using both national and international tenders.

For the implementation of the ACT policy, CAMEBU provides regular information to the GFATM principal recipient, the World Bank Project on Population and Health. It is not directly responsible for the procurement of the ACT medicines. The procurement of ART-AQ using GFATM funding is done through UNICEF on behalf of the principal recipient.

Initially, Burundi procured loose tablets of artemisinin and amodiaquine of uniform strength and had to cut the pharmaceuticals to dispense them to children who required smaller doses. The country now procures preparations of differing strengths co-packaged in blister packs. These co-packaged products are being deployed to the health facilities as their current supply of loose medicines is used up. Between January and March 2005, a total of 794,340 treatment

doses of ART-AQ were received in-country in the following formulations: 12 by 12 formulation (co-blistered presentation of 12 artemisinin tablets and 12 amodiaquine tablets for adults), 478,280 treatment doses; 6 by 6 formulation (6 artemisinin and 6 amodiaquine tablets), 168,880 treatment doses; 3 by 3 formulation (3 artemisinin and 3 amodiaquine tablets), 147,180 treatment doses.

Quantification

Normally, CAMEBU is responsible for the quantification of national medicine requirements. It does this based on the morbidity data that it receives from the provinces through the DPML and the consumption patterns and trends for each province. The provincial health director determines the provincial needs by cumulating the needs of all the constituent sectors and then submitting this to the DPML. The monthly provincial request for medicines is reviewed by the department and modified/approved for supply by CAMEBU. Each health sector chief develops a sector need by aggregating the requirements submitted by the constituent health facilities and then submits this to the provincial health director. Monthly requirements for each health facility are based on the number of cases of malaria seen, and these requirements are submitted to the health sector chief.

CAMEBU was not initially involved in quantification of needs for ACT. At the launch of the ACT policy, the government designated UNICEF as the procurement and distribution agency, and UNICEF was therefore responsible for managing the entire process from procurement and distribution to monitoring of use and reporting.

The amount of the initial two-month supply of ART-AQ that was procured and distributed to the provinces by UNICEF was based on the morbidity data. The provinces were required to monitor their consumption and report monthly to UNICEF; after the first two months, the supply from UNICEF was based on this monthly consumption with a 50 percent markup each month to serve as the safety stock and ensure availability of ACT.

At the end of January 2005, UNICEF handed over the management of the supply of ART-AQ to CAMEBU, along with all the tools and infrastructure it had developed to manage the supply. However, at present, CAMEBU is still not involved in quantification of ACT requirements. The NMCP quantifies requirements and submits them to the GFATM focal person in the MOH, who places the orders through UNICEF. The ordered ACT medicines are then delivered to CAMEBU for distribution through the routine channels.

Distribution

As explained earlier, normally each province submits its supply requests to CAMEBU through the DPML, and CAMEBU then issues the supplies based on the availability of the required medicines. The DPML later pays CAMEBU for the supplies sent to the provinces. The provinces are responsible for picking up the supplies and transporting them to the provincial medical stores. Each health center within a province sends someone to the provincial store to collect its supplies. Health centers pay the provincial store directly for the pharmaceuticals they obtain.

The major problem of the pharmaceutical distribution system is transport logistics, as each province has only one vehicle. When the provinces are unable to send someone to CAMEBU

for supplies, CAMEBU distributes to them using its own trucks. Health center staff use bicycles to collect supplies from the provincial store.

Between December 2003 and January 2005, UNICEF managed the distribution of ACT medicines to the health facilities with assistance (collection and distribution of medicines) from provincial health authorities in all but one or two provinces.

Phasing Out Sulfadoxine-Pyrimethamine

There was no initial plan for phasing out the stocks of SP, which was previously used for the first-line treatment of malaria. The MOH decided that after March 2005, no SP could be imported into the country and wrote to all stakeholders involved in procuring SP informing them of this new policy. As implementation of the new ACT policy began November 10, 2003, most importers had already stopped SP importation. The letter was effective because the MOH must provide authorization for any pharmaceutical to be imported into Burundi. Expired SP stocks were destroyed. Some SP imported in UNICEF kits was also withdrawn for destruction.

Pharmacovigilance

Six sentinel sites for reporting adverse events resulting from antimalarial medicines were set up in 2003. However, data is not being collected or reported due to funding limitations and challenges associated with lack of motivation in peripheral health agents. WHO supported the establishment of a pharmacovigilance system by developing documents and training the health workers. There is currently no postmarketing surveillance system.

Pharmaceutical Management Information System

Communication is a general problem within the health sector in Burundi. However, all provinces have telephones and faxes and some have Internet access. Inventory information on the supply of ACT medicines was available at all levels while UNICEF managed the ACT supply system. During this time, there was a lot of emphasis on supervisory visits to the provinces and health facilities. The supervisory visits encouraged regular monthly reporting by provinces.

The information system may be weaker now that CAMEBU is running the system with its limited resources. The major issues related to the pharmaceutical management information system are the following—

- The provinces have difficulties with monitoring consumption of medicines. Human resource capacity at the provincial level is inadequate, and this is made worse by the high attrition rate.

- CAMEBU is a relatively new central medical store and may need to study other central medical stores and obtain some technical support to improve performance.

- The pharmaceutical information management system is not computerized or linked to a network. Some hardware and software is required.

Private Sector Participation in the Implementation of ACT

It is government policy to involve the private sector in the implementation of the ACT policy. As part of the government policy, the nonprofit mission health facilities were supplied with ART-AQ. However, the government has not approved the importation and use of ART-AQ by the for-profit private sector because it fears leakage of public sector drugs into the private sector. The for-profit private sector in Burundi is limited to the capital city of Bujumbura, where 4 percent of the population (400,000–500,000 people) lives. The private sector here is using quinine as first-line treatment (recommended as the second-line medicine by the government) or artesunate monotherapy. Despite this preference, government-supplied ART-AQ is finding its way into the for-profit private sector, where it is sold at 10–20 times the recommended price. The government believes that the solution lies in WHO prequalifying other sources of ART-AQ so that the for-profit private sector can be authorized to import and use other brands of ART-AQ.

The Société Industrielle Pharmaceutique (SIPHAR), a private manufacturer/importer of a range of more than 46 pharmaceutical products, controls a large proportion of the pharmaceutical market in the Great Lakes Region, which includes Burundi. SIPHAR has been operational since December 2003. SIPHAR, supported by Cipla (an Indian manufacturer), has some co-blistered ART-AQ in stock and ready to meet demand in the private sector as soon as the government gives approval. SIPHAR also has the capacity to locally produce and package ART-AQ with technical assistance from Cipla. The company informed the mission team that Cipla was recently prequalified by WHO for ART-AQ manufacture. It was also reported that Cipla has a history of delivering ART-AQ to Kenya through MSF procurement. SIPHAR currently manufactures artesunate (tablets and syrup) and quinine (tablets and injectables), which are sold in the Burundi private sector market as monotherapy treatments.

Monitoring and Evaluation

Through the Round 2 GFATM grant, USD 100,000 has been set aside to monitor the continued efficacy of the medicines in use for treatment of malaria. This monitoring has been contracted out to the Tropical Institute of Belgium and is to begin in May 2005. The plan is to start with two sites and scale up to additional sites as funding allows.

EPISTAT, the MOH epidemiology and statistical service, has 14 staff members and collects health information data on a regular basis. Data on malaria cases in pregnant women and children under five are collected every two weeks, while the total number of malaria cases is reported monthly. Not all indicators for malaria are collected; only the number of cases of suspected and severe malaria and data on malaria in pregnancy and in children under five years are collected. Provinces have been trained on quality data collection and reporting for the HMIS. The number of cases reported is between 150,000 and 200,000 per month. Future plans are to train districts on quality data collection, to support supervision of data collection, and to set up a database backup system.

Constraints, Challenges, and Lessons Learned

Preventing a malaria epidemic (56 percent of the population is at risk) requires a well-functioning health management information system and outbreak preparations that are still challenging the Burundi health system. Sustainability of low-cost ACT is also a challenge; it had been implemented initially with collaboration with partners in a context of humanitarian action during a malaria epidemic.

The lesson of the Burundi mission is that engaging partners in-country enables in-depth understanding of the issues and challenges facing malaria control in the country. The situation in Burundi also shows that emergency response can smoothly transition into a routine system. However, as the effort is made to reduce the price of ACT, an attempt to also increase the income of health facilities might be helpful.

Recommendations

Organization of Health Services

Given that malaria is the greatest cause of morbidity and mortality in Burundi, malaria control should be mainstreamed in the MOH hierarchy. In addition, IPO/NPO/MAL (a Malaria International Program Officer or National Program Officer) should be urgently recruited in the WHO country office.

Policy Change and Implementation

- The NMCP should revise and disseminate its STGs for malaria. More microscopists should be trained. A Round 5 GFATM grant should be secured and used to support procurement of more RDTs, microscopes, and reagents, as well as training of microscopists.

- To manage artesunate monotherapy, possible low compliance with ART-AQ protocols, and misuse of quinine as first-line treatment, the following should be considered—

    - *Operations research (OR):* Given the use of artesunate monotherapy in the private sector and the potential low level of compliance with ART-AQ protocols at the community level, there is a real and present danger of artesunate-resistant *P. falciparum* developing in Burundi. Resistance to quinine is also a possibility given its use as the first-line treatment in some health facilities. Therefore, the NMCP should document through OR the use of artesunate monotherapy in Burundi as well as the level of compliance with the use of ART-AQ. As it has been more than one year since the rollout of the ACT policy, the impact of the new treatment policy should be monitored through a review of the morbidity and mortality data. Also, continued ART-AQ and quinine efficacy monitoring should be undertaken so as to accumulate data for possible policy review by the end of 2006.

    - *Advocacy and confidence building with private practitioners and professional associations:* The NMCP should plan and implement OR in collaboration with private sector practitioners and associations such as the Medical Association, the Pharmaceutical Association, and the Association of Nurses and Midwives. The

findings of the OR should be presented at a special seminar or meeting of these associations in order to scientifically convince private practitioners on the emerging dangers of their practices. The NMCP could also provide financial support to the annual meetings of the professional associations and thereby enable these associations to focus their annual meetings on malaria in the next two years.

- *Subsidy for quinine:* Partners should work with the MOH to subsidize quinine so that its cost equals that of ACT; this should minimize the practice of using quinine as first-line treatment because of income-generation pressures on health facilities.

- *Ensure private sector access to ART-AQ:* The NMCP should confirm with WHO that Cipla-produced ART-AQ has been prequalified so that the private sector can be authorized to procure this or similar brands. This step will help prevent leakage into the public sector supply chain and partially address the use of artesunate monotherapy. In addition, some private health facilities should be accredited to allow subsidized (public sector) ACT in the private sector. There is also a need to allow ACT in hospitals to reduce their practice of dispensing quinine for uncomplicated malaria.

Financing and Resource Mobilization

Burundi should apply for a GFATM Round 5 grant for health systems strengthening and procurement of pharmaceuticals and supplies beyond 2007.

Planning and Coordination

The MOH should work with partners to set up and coordinate an RBM steering committee. This committee should meet quarterly. The RBM steering committee should also set up technical sub-committees on case management, ITNs, malaria in pregnancy, emergency preparedness and response, and so on, which would meet monthly to work on technical issues and brief the RBM steering committee at its quarterly meeting. Written terms of reference should be developed for the steering committee and for each sub-committee.

Pharmaceutical Management

- *Pharmaceutical quantification:* ACT medicines should be fully incorporated into the national routine pharmaceutical procurement and distribution system. CAMEBU should be involved in the pharmaceutical management system from the quantification stage. There is also a need to define and train on uniform quantification methods at all levels, as some health facilities earmark 12–25 percent of stock as buffer stocks while ordering monthly supplies.

- *Pharmaceutical procurement and distribution:* To help strengthen pharmaceutical distribution logistics, the MOH and its partners should explore ways of providing more transport for distribution. To reduce the burden of monthly visits to the national level, consideration should be given to keeping a two to three month supply of pharmaceuticals in the provinces after the capacity of provinces to quantify needs has been strengthened.

- *Pharmaceutical management capacity:* Because each province determines its own pharmaceutical requirements, it is necessary to build capacity for pharmaceutical

management at both national and provincial levels. This could be achieved through training. Given high staff turnover, two to four persons per province should be trained in pharmaceutical management. Annual training for two new pharmaceutical managers per province will ensure a pool of skilled managers within each province.

- *Pharmaceutical management information system:* The pharmaceutical management information system should be strengthened through systems review, computerization, training, and staff tours to study best practices in other countries.

- *Pharmacovigilance:* The pharmacovigilance system should be strengthened through a review reporting system, the introduction of zero reporting, and expansion to more sites.

Behavior Change Communication

The MOH should include capacity building for health communication in the GFATM Round 5 proposal being developed. IEC and behavior change communication (BCC) to the public needs to be intensified to sustain a high level of treatment acceptance and compliance with ACT protocols. The NMCP and the IEC Department should work together to develop and disseminate IEC materials to all health facilities.

ANNEX 1. ACTION PLAN FOR TECHNICAL SUPPORT NEEDS FOR BURUNDI

Description of Technical Assistance required	Timeline	Priority	Who will provide required TA?
	Within 6 months = April '05 - Sept. '05 Within one year = By March '06 Within 18 months = By Sept. '06	1 = Essential for ACT implementation and scale up 2 = Important but not essential 3 = Nice but not critical	If NMCP has already identified a non-MAC agency to provide TA, write the name of the agency; Otherwise write MAC (MAC partner/s)
1. Policy Change and Implementation			
1.2 Strengthen human capacity for malaria control by recruiting MAL IPO or NPO in WHO Office	Within 6 months	1	MAC (WHO)
1.3 Revise STG (to include new tx policy) and disseminate malaria standard treatment guidelines	Within 6 months	1	MAC (WHO)
1.4 Train microscopists for the 355 microscopes ordered through GF	Within 6 months	1	MAC (WHO, CDC)
1.6 Conduct and disseminate operations research studies (to document the problem of ART mono-therapy; assess compliance with the ART-AQ at community level	Within 6 months	1	MAC (WHO, CDC)
1.10 Authorize stocking of ART-AQ by hospitals (as uncomplicated malaria does occur in the hospital set up. This will reduce dispensing quinine for uncomplicated malaria in hospitals).	Within 6 months	1	MOH/DPML
1.8 Register and authorize private sector use of ART-AQ (after confirming pre-qualification by WHO)	Within 6 months	1	MOH/DPML
1.11 Accredit more private health facilities for supply/use of public sector ART-AQ	Within 6 months	1	MOH/DPML
1.12 Assess impact of ACT policy implementation (through review of the morbidity and mortality data)	Within 18 months	3	MAC (WHO, CDC)
1.7 Strengthen malaria drug efficacy monitoring system (through continuous testing of current and other ACTs: ART-CQ; ARTH-LUM; Quinine; etc.)	Within 18 months	2	MAC (WHO, CDC)
2.1 Strengthen Pharmaco-vigilance system (introduce zero reporting; train staff and supervise)	Within 18 months	2	MAC (WHO, CDC, RPM Plus)
2. Financing and Resource Mobilization			
1.5 Develop proposal (focused on health systems strengthening including procurement of ACTs and quinine) for GF R5 grant application	Within 6 months	1	MAC (WHO, CDC, RPM Plus)
1.9 Subsidize the cost of quinine to the end user (same price as ART-AQ)	Within 18 months	1	MOH, Partners
3. Planning and Coordination			
1.13 Set up RBM steering committee with TORs and technical working groups (Case management, ITN, MIP, EPR, etc)	Within 6 months	1	MOH, WHO/CO
1.1 Strengthen malaria control program bysetting up a full fledged malaria control department	Within 18 months	3	MOH/DGSP
4. Drug Management			
3.1 Integrate ACT quantification, procurement and distribution into the national routine drug procurement and distribution system.	Within 6 months	1	MOH/DPML
3.2 Strengthen collaboration with NMCP so that CAMEBU is involved in ACTs quantification through procurement and distribution	Within 6 months	1	MOH/DPML
3.4 Strengthen drug distribution to health facilities (consider 2-3 monthly supplies to provinces)	Within 6 months	1	MOH/DPML
3.3 Strengthen capacity for drug management at national and provincial levels through definition of uniform method of quantification of drugs including ART-AQ and training of drug management staff	Within 18 months	1	MAC (RPM Plus)
3.5 Strengthen drug management information system through systems review, computerization, training and study tours to best practice countries.	Within 18 months	1	MAC (RPM Plus)
4. Behavior Change Communication			
Produce and disseminate appropriate IEC materials on new drug policy	Within 6 months	1	MAC (WHO) and UNICEF (in-country)
Strengthen the capacity of the IEC department to produce materials in-house (support procurement of required equipment)	Within 18 months	2	MAC (WHO) and UNICEF (in-country)

ANNEX 2. MISSION ACTIVITY SCHEDULE

Date	Time	Activity	Responsible	Organizer
March 16, 2005 Wednesday		Arrival		
March 17, 2005 Thursday	9:00–9:30	Briefing WHO representative on the mission	WHO	Asst. MAL/PEV
	10:00–11:00	Briefing with Security Cell	WHO	Asst. MAL/PEV
	11:30–14:00	Briefing the LMTC	WHO	Asst. MAL/PEV
	14:30–16:30	Work at WCO	WHO	Asst. MAL/PEV
March 18, 2005 Friday	8:00–9:30	Briefing with DSPS	WHO	LMTC
	10:00–11:00	Visit UNICEF	WHO	LMTC
	12:00–13:00	Visit CAMEBU	WHO	LMTC
	15:00–16:00	Visit ECHO	WHO	LMTC
March 21, 2005 Monday	8:30–9:30	Visit PNSR	MAC Team	LMTC
	9:30–10:30	Visit MSF Belgium	MAC Team	LMTC
	10:30–11:30	Visit MSF Holland	MAC Team	LMTC
	11:30–12:30	Visit to GFATM Focal Person	MAC Team	LMTC
	14:00–14:30	Visit IEC/EPISTAT	MAC Team	LMTC
	17:00–18:00	Briefing with DGSP	MAC Team	LMTC
March 22, 2005 Tuesday	8:30–9:30	Visit SIPHAR	MAC Team	LMTC
	9:30–10:30	Belgium Technical Cooperation	MAC Team	LMTC
	11:00–12:00	Visit ALUMA (NGO)	MAC Team	LMTC
	14:00–15:00	Visit DPML	MAC Team	LMTC
	15:00–17:00	Prioritize activities at LMTC	MAC Team	LMTC
March 23, 2005 Wednesday	9:00–10:00	Field visit to CMC	MAC Team	LMTC
	10:00–11:00	Visit Kigobe Health Center	MAC Team	LMTC
	11:00–12:00	Visit Bujumbura Rural Health Bureau	MAC Team	LMTC
	14:00–17:00	Work on report	MAC Team	LMTC
March 24, 2005 Thursday		Debrief with WR	MAC Team	LMTC
		Debrief with DGSP	MAC Team	LMTC
	11:00–12:00	Meeting with IEC Department	MAC Team	LMTC
	14:00–16:00	Debrief with partners	MAC Team	LMTC
March 25, 2005, Friday		Departure	MAC Team	Asst. MAL/PEV

ANNEX 3. PEOPLE CONSULTED DURING MISSION

Name	Organization	Position
Kossi Ayigan	World Health Organization	Action de Sante dans les Situations de Crise (WR acting in-charge)
Liliane Nduwayezu	World Health Organization	Assistant Programme MAL/PEV
Dismas Baza	MOH	Head of Programme de LMTC
Jeanne Karendo	MOH	Deputy Head of Programme de LMTC
Hypax Mbanye	MOH	Advisor Vector Control
Jerome Ndaruhutse	MOH	Directeur technique du Projet: Appui a l'Initiative Faire Reculer le Paludisme au Burundi finance par le Fonde Mondial
Animata Thiaw	Security Cell Sierra Base	Deputy Coordinator of Security and Communication Cell
Olivier Basenya	MOH	Directeur du Departement des Programmes et Services de Sante (DSPS)
Daniel Verna	UNICEF	Administrateur du Programme (Sante/Nutrition)
Donatien Bigirimana	CAMEBU	Directeur General
Yorgos Kapranis	ECHO	Directeur du Projet
Emmanuel Seheye	EPISTAT	Directeur
Baritwanajo Antoine	PNSR	Directeur Technique du PNSR
Birabuza Andre	PNSR	Directeur du PNSR
Busogoro Jean Francios	PNSR	Chef de Servises (prestations cliniques)
Ndagije Mariam	PNSR	Directeur Adjoint Change des Services Administrations and Finances
Fabio Pompetti	MSF Belgium	Chef de Mission
Shelina Musaji	MSF Holland	Medical Coordinator
Georges Nsengiyumva	MOH	Directeur General de la Sante Publique
Salim Sonji	SIPHAR	Administrateur Directeur General
Albert Mbonerane	MOH	Ministere de l'Amenagement du Territoire, de l'Environnement et du Tourisme
Yves Couvreur	Beligium Technical Cooperation	Chef de Mission
Lievin Mizero	DPML	Directeur
Phinees Ntakiyiurta	Kigobe Health Centre	In-charge
Patrice Barasukana	Bujumbura Rural Provincial Health Bureau	Acting Provincial Medical Officer
Crescence Nsabiyabandi	Bujumbura Rural Provincial Health Bureau	Provincial Drug Manager
Spes Ndayishimiye	IEC/BCC	Chef de Service IEC
Robert Luneburg	USAID/Burundi	Director